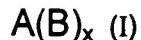


WHAT IS CLAIMED IS:

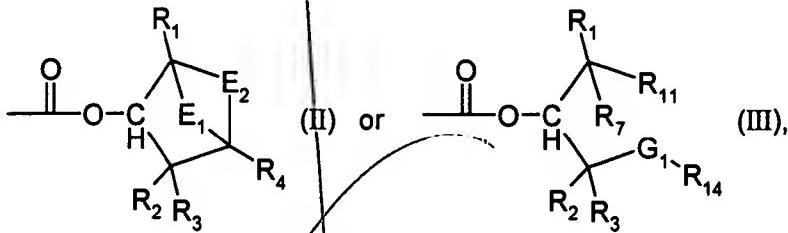
1. A compound of the formula



where x is an integer from 1 to 8,

A is the radical of a chromophore of the quinacridone, anthraquinone, perylene, indigo, quinophthalone, indanthrone, isoindolinone, isoindoline, dioxazine, azo, phthalocyanine or diketopyrrolopyrrole series, this radical being linked with x B groups via one or more heteroatoms, these heteroatoms being selected from the group consisting of N, O and S and forming part of the radical A, and

B is hydrogen or a group of the formula



although at least one B group is not hydrogen and when x is from 2 to 8 the B groups may be identical or different,

E₁ is oxygen or is selected from the group consisting of methylene, methyleneoxy and ethylene, each member of the group being unsubstituted or substituted by one R₅ or by 2 radicals, R₅ and R₆, or is two separate radicals, R₇ and R₈, R₇ being attached to the same atom as R₁ and R₈ to the same atom as R₄,

E₂ is selected from the group consisting of methylene, ethylene, propylene and butylene, each member of the group being unsubstituted or substituted by one R₉ or by 2 radicals, R₉ and R₁₀, or is two separate radicals, R₁₁ and R₁₂, R₁₁ being attached to the same atom as R₁ and R₁₂ to the same atom as R₄,

G₁ is O or N(R₁₃),

R₁ is hydrogen, methyl, ethyl, methoxy or ethoxy,

R₂ and R₃ are independently hydrogen, C₁-C₈alkyl, C₁-C₈alkoxy, C₁-C₈alkoxy-C₂-C₈alkylene or C₁-C₈alkoxy-C₂-C₈alkyleneoxy,

R₄ is hydrogen, C₁-C₈alkyl, C₁-C₈alkoxy, C₁-C₈alkoxy-C₂-C₈alkylene, C₁-C₈alkoxy-C₂-C₈alkyleneoxy, C₅-C₆cycloalkyl, C₅-C₆cycloalkoxy, phenyl, phenoxy or a 5- or 6-membered, saturated or singly to triply unsaturated heterocyclic radical,

R₅, R₈, R₉, R₁₀ and R₁₂ are independently C₁-C₈alkyl or C₁-C₈alkoxy, or R₈ and R₉ together are a direct bond,

R₇ and R₈ are independently hydrogen, C₁-C₈alkyl, C₁-C₈alkoxy, C₁-C₈alkoxy-C₂-C₈alkylene or C₁-C₈alkoxy-C₂-C₈alkyleneoxy,

R₁₁ is hydrogen, C₁-C₈alkyl or C₁-C₈alkoxy,

R₁₃ is methyl or ethyl, and

R₁₄ is C₁-C₈alkyl, C₅-C₆cycloalkyl, phenyl or a 5- or 6-membered, saturated or singly to triply unsaturated heterocyclic radical,

it being possible for two methoxies attached to the same carbon atom to combine and form 1,2-ethylenedioxy, or for methoxy to combine with ethoxy attached to the same carbon atom to form 1,2- or 1,3-propylenedioxy, or for methoxy or ethoxy to combine with ethoxy attached to α - or β -enched carbon to form dimethylmethylen,

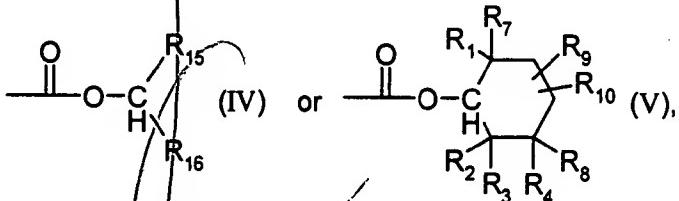
and where additionally

- a) R₁, R₂, R₃, R₇ or R₁₁ is hydrogen, and
- b) when E₁ is two separate radicals R₇ and R₈ and E₂ is methylene or ethylene at least one of the following further conditions applies:
 - R₁, R₂, R₃, R₄, R₇, R₈, R₉ or R₁₀ is methoxy or ethoxy;
 - R₂, R₃, R₄, R₇, R₈, R₉ or R₁₀ is secondary C₃-C₈alkyl or tertiary C₄-C₈alkyl or C₃-C₈alkoxy;
 - R₂, R₃, R₇ or R₈ is C₁-C₈alkoxy-C₂-C₈alkylene or C₁-C₈alkoxy-C₂-C₈alkyleneoxy;

or

- R₄ is C₅-C₈cycloalkyl, C₅-C₆cycloalkoxy, phenyl, phenoxy or a 5- or 6-membered heterocyclic radical.

2. A compound according to claim 1, wherein B is selected from groups of the formulae



where R₁₅ is -CR₁R₇R₁₁ and R₁₆ is -CR₂R₃-CR₄R₈R₁₂ or -CR₂R₃-G₁R₁₄, and R₂, R₃, R₄, R₇, R₈, R₉ or R₁₀ is secondary C₃-C₈alkyl or tertiary C₄-C₈alkyl, especially tert-butyl, tert-amyl or 2,4-dimethyl-2-pentyl.

S 21
527
S 20
3. A process for mass colouration of a polymer, which comprises adding at least one compound of the formula (I) according to claim 1 to the polymer before or during processing, the processing taking the form of extrusion, injection moulding or fibre spinning at 220 to 330°C.

4. An engineering plastic having a glass transition point (T_g) of 220 to 330°C, preferably polyolefin, polyester, polyamide or a polyimide, polysulfone, polyether sulfone, polyphenylene oxide, polyarylene, polyarylene sulfide, polyepoxide, polyphenylene oxide or ABS, pigmented according to claim 3.

5. An engineering plastic according to claim 4 in the form of a fibre.

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6. A process for pigmenting a porous material, which comprises at least one compound of the formula (I) according to claim 1, in liquid form or dissolved in an inert liquid in a weight concentration of at least 25%, penetrating into the pores of the porous material and thereafter being thermally converted into a pigment of the formula A(H)_x (VI). 428/472, 2
Ex. D 6 - D 7, P. 21

7. Material pigmented according to claim 6, selected from anodized aluminium and sintered boric material. Ex. D 4, P. 20+

8. High molecular weight organic material having a glass transition point (T_g) of 140°C to

~~220°C and containing in its bulk 0.1 to 10% by weight of a compound of the formula (I), based on the total weight.~~

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9. A thermochromic material comprising a polymer coloured in the mass by a product obtainable by partial thermal decomposition of a compound of the formula (I) or by two compounds, selected from the group consisting of compounds of the formula (I) and pigments of the formula $A(H)_x$ (VI).

10. A thermochromic material according to claim 9, which is comprised within a composite, preferably within a security item.

11. A compound according to claim 1, wherein E_1 is oxygen, methylene or two separate radicals R_7 and R_8 .

12. A compound according to claim 11, wherein E_1 is methylene or two separate radicals R_7 and R_8 .

13. A compound according to claim 1, wherein E_2 is ethylene or two separate radicals R_{11} and R_{12} .

14. A compound according to claim 1, wherein G_1 is O.

15. A compound according to claim 1, wherein R_1 is hydrogen, methyl, ethyl, methoxy or ethoxy.

16. A compound according to claim 1, wherein R_2 , R_3 and R_4 are hydrogen or C_1-C_8 alkyl.

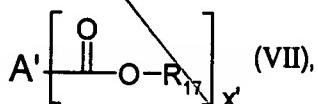
17. A compound according to claim 1, wherein R_5 , R_6 , R_9 , R_{10} and R_{12} are methyl, secondary C_3-C_8 alkyl or tertiary C_4-C_8 alkyl.

18. A compound according to claim 1, wherein R_7 , R_8 and R_{11} are hydrogen or methyl, especially hydrogen.

19. A compound according to claim 18, wherein R_7 , R_8 and R_{11} are hydrogen.

20. A compound according to claim 1, wherein R_{14} is C_1-C_8 alkyl.

21. A compound according to claim 1, wherein said B groups exclusively of the carboxyl group contain at most 3 further oxygen atoms.
22. A compound according to claim 21, wherein said B groups contain no or 1 further oxygen atom.
23. A compound according to claim 21, wherein said B groups exclusively of the carboxyl group contain 2 or 3 further oxygen atoms and no carbon atom in this B group other than in the carboxyl group is bonded to more than one oxygen atom.
- Schreiber*
24. A compound according to claim 1, wherein said groups of the formulae (II) or (III) are asymmetrical.
25. A binary or ternary mixture including 60 to 99.9% by weight of a compound of the formula (I) and 0.1 to 40% by weight of one or two thermally more labile compounds of the same chromophore class with an A' that differs from A.
26. A mixture according to claim 27, which is a binary mixture of 99.5 to 95% by weight of a compound of the formula (I) and 0.5 to 5% by weight of a thermally more labile compound of the same chromophore class with an A' that differs from A.
27. A compound according to claim 25, wherein the thermally more labile compound of the same chromophore class with an A' that differs from A is a compound of the formula



where x' is an integer from 1 to 8 and A' is the radical of a chromophore of the quinacridone, anthraquinone, perylene, indigo, quinophthalone, indanthrone, isoindolinone, isoindoline, dioxazine, azo, phthalocyanine or diketopyrrolopyrrole series, this radical being linked with x' -COOR₁₇ groups via one or more heteroatoms, these heteroatoms being selected from the group consisting of N, O and S and forming part of the radical A' and R₁₇, being any desired tertiary group.

28. A compound according to claim 27, wherein said R₁₇ radicals are selected from the group consisting of tert-butyl, tert-amyl, 2-methyl-3-buten-2-yl, 2-methyl-3-butyn-2-yl, 4-oxa-

2-pentyl and 4,7-dioxa-1-methyl-2-octyl.

29. A compound according to claim 1, wherein said B groups are -COOR_{18} wherein R_{18} stands for (-)-2-isopropyl-5-methyl-cyclohexyl, (-)-bornyl, 1-(2'-furyl)-2-propyl, 1-methoxy-2-propyl, 1-phenyl-2-propyl, 2-(2-methoxy-ethoxy)-cyclohexyl, 2,4-di-tert-butyl-cyclohexyl, 2-ethoxy-cyclohexyl, 2-heptyl, 2-nonyl, 2-octyl, 2-pentyl, 2-tert-butylcyclohexyl, 4-heptyl, 4-tert-butylcyclohexyl, thujyl, caryl, pinyl, bornyl, norcaryl, norpinyl or norbornyl.

30. A compound according to claim 29, wherein R_{18} stands for (-)-2-isopropyl-5-methyl-cyclohexyl, (-)-bornyl, 2-(2-methoxy-ethoxy)-cyclohexyl, 2,4-di-tert-butyl-cyclohexyl, 2-ethoxy-cyclohexyl, 2-tert-butylecyclohexyl or 4-heptyl.

31. A compound according to claim 29, wherein R_{18} stands for (-)-2-isopropyl-5-methyl-cyclohexyl or 4-heptyl.